the moving particle has or has not already a velocity X in the direction of the x-axis, is the case in which the kinetic energy is simply dependent upon $X^2 + Y^2$.

Not directly connected with this matter of the dynamics of the electron, but of great interest, is the question of the amount of electrical energy stored in the electric field which surrounds an electron. Taking the data which have been obtained from experiments on cathode rays, it appears that a number of electrons sufficient to weigh a gram have associated with them about 6.10^{13} joules (or 40 million million foot-pounds) of energy when stationary. That is, estimating that a hot gas radiates 5 watts per gram, the total electron energy associated with an atom would last for a hundred *million million million* oscillations of full intensity before it were all exhausted by radiation, or rather the energy associated with a pair of rotating electrons would last for a hundred million million million periods before it were all radiated. This gives us some insight into the matter mentioned in the foregoing note on the interference of light with great path difference. It is probable that the limit of path difference which will produce interference is determined by frequency of molecular collisions rather than by diminished amplitude of atomic oscillations between collisions.

Another matter of interest, growing out of the excessively small size of the electron, vastly smaller than the atom, is that the electrons are always at great distances apart in comparison with their size, so that the variations of total energy due to different forms of electron aggregation are but a small fraction of the total energy. Thus the diminution of energy accompanying the formation of a gram of water is only about 16,000 joules or one four-thousand-millionth part of the total electron energy.

Another matter of interest is that the volume integral of ether stress—which may be the fundamental cause of gravitation—is independent of states of electron aggregation to about the same degree of approximation as above pointed out for electron energy.

W. S. F.

CURRENT NOTES ON METEOROLOGY.

MARCH WEATHER PROVERBS.

Mr. B. C. Webber, acting director of the Meteorological Service of Canada, contributes a paper on 'March Winds' to a recent number of the *Monthly Weather Review* (Vol. XXXI., No. 3). On the basis of thirty years' records for Ontario, Quebec and the Maritime Provinces, it appears that there is a considerable decrease in the number of days with high winds in March, as compared with the three preceding months; that the month of March has fewer cold winds than February; that the snowfall of March is very much less than during the preceding winter months, and that there is nothing in the records for the past thirty years to justify the assumption that 'if March comes in like a lion it goes out like a lamb.' Thus do many of the 'popular' sayings about the weather often prove to be without foundation in fact when they are confronted with the results of meteorological observations. The results of the investigation along somewhat similar lines, by W. B. Stockman, of the U. S. Weather Bureau, are discussed in the May *Review*.

HEIGHT OF THE SEA BREEZE.

Observations as to the height of the diurnal sea breeze are few in number, albeit of considerable importance. By means of a captive balloon, sent up from Coney Island a number of years ago, it was found that the average height at which the cool inflow from the ocean was replaced by the upper warm outflow from the land was from 500 to 600 feet. At Toulon, in 1893, the height of the sea breeze was found to be about 1,300 feet, and a distinct off-shore current was found between 1,900 and 2,000 feet. More recently (1902), on the west coast of Scotland, Dines, using kites, has noted that the kites would not rise above 1,500 feet on sunny afternoons, when the on-shore breeze was blowing (*Quart. Journ. Roy. Met. Soc.*, April, 1903).

STORMS OF THE GREAT LAKES.

For some years the Weather Bureau has been giving special attention to the storms which occur over the Great Lakes, with a view

to making navigation on the lakes safer. Bulletin K of the Weather Bureau, by Professor E. B. Garriott, entitled 'Storms of the Great Lakes' (4to, 1903, pp. 9, charts 968), includes 768 charts illustrating the more important storms of the lakes which have been described in the *Monthly Weather Review* during the twenty-five-year period 1876–1900. Each storm is illustrated by four charts, covering thirty-two to forty-eight hours of its history, the object being to present typical lake storms which have occurred in the different months of sufficient intensity to be dangerous to shipping. The month of November, with forty-five severe storms in twenty-five years, stands first. October and December rank in the same group, and then come September and March. The storms are classified as 'southwest storms (the most destructive)'; 'storms from the middle west,' 'northwest storms,' and 'storms of tropical origin.' This *Bulletin* will be useful first of all to the forecasters of the Weather Bureau whose districts embrace part of the Great Lake region, and to navigators on those Lakes, but teachers of meteorology in schools and colleges will find in this very large number of selected charts abundant material for illustration in connection with the study of weather maps and of cyclones.

NOTES.

The Annuaire météorologique pour 1903, of the Royal Observatory of Belgium, contains, in addition to the usual meteorological data and tables, the following special contributions: A. Lancaster, 'La Force du Vent en Belgique' (pp. 220–352); E. Vanderlinden, 'Étude sur la Marche des Cirrus dans les Cyclones et les Anticyclones d'après les Observations faites à Uccle'; J. Vincent, 'Aperçu de l'Histoire de la Météorologie en Belgique, III. Partie.'

Beginning with May 6 last, the meteorological records obtained by means of kites at Hamburg have, together with those obtained at the Berlin Aeronautical Observatory, been published in the daily weather reports of the German Seewarte.

R. DEC. WARD.

BOTANICAL NOTES.

RECENT BOTANICAL PAPERS.

AMONG the recent botanical papers may be mentioned the following:

'The Wood Lot,' by Professor H. S. Graves, of the Yale Forest School, and R. T. Fisher, of the United States Bureau of Forestry. It is published by the United States Bureau of Forestry, and discusses the woodland problems, especially in New England, and makes suggestions in regard to the use and perpetuation of the small bodies of woodland which still persist in that portion of the country. It should prove very valuable to the New England farmer.

'The Seasoning of Timber,' is an interesting paper by Doctor von Schrenk, of the United States Bureau of Forestry. In it he discusses the problems which face the practical man in the seasoning of timber. The distribution of water in the timber, its relation to decay, what seasoning is, something as to preservative treatments, etc., make up the first part of the book, and this is followed by a discussion of experiments made in the west in the endeavor to secure greater durability by treatment of one kind and another. The paper is certainly one of the most helpful of any published by the bureau.

MR. J. N. ROSE, of the United States National Museum, publishes in the Contributions from the United States National Museum, a continuation of his 'Studies of Mexican and Central American Plants.' This contribution covers nearly sixty pages, and is filled with descriptions of new and little-known plants from this very interesting region. Several good colored illustrations accompany the paper.

In a recent number of *Rhodora,* Professor C. S. Sargent continues his descriptions of 'Recently Recognized Species of Crataegus in Eastern Canada and New England.' He adds a number of new species to the already very long list of recently separated forms.

ANOTHER PHYTOBEZOAR.

SOME time ago there came into my possession a ball about ten centimeters in diameter,